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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re:
U.S. Patent No: 6,866,024 B2
Inventors: Rizzoni et al.
Issued: March 15, 2005
Serial No.: 10/092,031
Examiner: John T. Kwon
Group Art Unit: 3747
Title: ENGINE CONTROL USING TORQUE ESTIMATION
Docket No.: OSU1159-148B

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. §1.8 (A)

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office at Central Fax No. (571) 273-8300 on April 21, 2006.

Trisha M. Beachy-Bryant
Trisha M. Beachy-Bryant, Paralegal

CERTIFICATE OF MAILING UNDER 37 C.F.R. §1.8 (A)

Date of Deposit: April 14, 2005

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as first-class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Trisha M. Beachy
Trisha M. Beachy, Paralegal

Sir:

REQUEST FOR CERTIFICATE OF CORRECTION PURSUANT
TO 37 C.F.R. 1.322

Transmitted herewith is a Certificate of Correction for the above-identified patent. Upon reviewing the patent, the patentee noted that the following typographical errors were made by the Patent and Trademark Office, which should be corrected as follows:

U.S. Patent No. 6,866,024 B2
Request for Certificate of Correction
Page 2 of 6

In column 4, lines 46-54,

please delete "

$$a_0 \Sigma 1 + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{true,k}$$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{true,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{true,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{3,k} x_{4,k} = \Sigma x_{3,k} y_{true,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{true,k}$$

and insert -- $a_0 \Sigma 1 + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{true,k}$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{true,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{true,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{3,k} x_{4,k} = \Sigma x_{3,k} y_{true,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{true,k} \quad -.$$

In column 7, line 37,

please delete "

$$\text{Estimated Value} = F(f_{\theta}, \theta, \theta)$$

(5) "

and insert -- $\text{Estimated Value} = F(f_{\theta}, \tilde{\theta}, \ddot{\theta})$ (5) -.

In column 7, line 48,

please delete "

$$P_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \theta + a_3 f_{\theta} \theta + a_4 \theta \theta$$

(6) "

and insert -- $P_{estimate} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \ddot{\theta} + a_4 \tilde{\theta} \ddot{\theta}$ (6) -.

U.S. Patent No. 6,868,024 B2
Request for Certificate of Correction
Page 3 of 5

In column 9, lines 40-61,

please delete "

TABLE 5

Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta$
2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \theta + a_4 \tilde{\theta} \theta$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \theta + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \theta + a_6 \tilde{\theta} \theta$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta}^2 + a_6 \tilde{\theta}^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \theta + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \theta + a_6 \theta^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta} + a_6 f_\theta \theta + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \theta + a_9 \theta^2$

and insert – Table 5. Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta$
2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \theta + a_4 \tilde{\theta} \theta$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \theta + a_6 \tilde{\theta} \theta$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 f_\theta^2 + a_5 \tilde{\theta}^2 + a_6 \theta^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \theta + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \theta + a_6 \theta^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \theta + a_4 f_\theta^2 + a_5 f_\theta \tilde{\theta} + a_6 f_\theta \theta + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \theta + a_9 \theta^2$

U.S. Patent No. 6,866,024 B2
Request for Certificate of Correction
Page 4 of 5

In column 13, lines 26-44,

please delete "

TABLE 6

Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i + b_{6,i} \cdot \theta_i^2 + b_{7,i} \cdot rpm \cdot \theta_i^2 + b_{8,i} \cdot ltq \cdot \theta_i^2$

and insert – Table 6. Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i$

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8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$ $+ b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i$ $+ b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i + b_{6,i} \cdot \theta_i^2$ $+ b_{7,i} \cdot rpm \cdot \theta_i^2 + b_{8,i} \cdot ltq^2 \cdot \theta_i^2$

In column 13, lines 51-53,

please delete "
$$\varepsilon = \min_{b_{j,i}} \left(\sum_{i=1}^N (a_{trained,i} - a_{estimated,i})^2 \right) \quad (23) "$$

and insert -
$$\varepsilon = \min_{b_{j,i}} \left(\sum_{i=1}^N (a_{trained,i} - a_{estimated,i})^2 \right) \quad (23) -.$$

A review of the Application as submitted and thereafter as amended, confirms that the errors were made in the printing of the patent.

Since the above noted errors for which a Certificate of Correction is sought were a result of Patent Office mistake, no fee is due (35 U.S.C. § 254). Approval of the Certificate of Correction respectfully is solicited.

Respectfully submitted,

Date: April 14, 2005

By:

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Page 1 of 7

PTO/SB/44 (04-04)

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2
DATED : March 15, 2005
INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 4, lines 46-54,
please delete "

$$a_0 \Sigma I + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{irv,k}$$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{irv,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{irv,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{3,k} x_{4,k} = \Sigma x_{3,k} y_{irv,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{irv,k}$$

and insert — $a_0 \Sigma I + a_1 \Sigma x_{1,k} + a_2 \Sigma x_{2,k} + a_3 \Sigma x_{3,k} + a_4 \Sigma x_{4,k} = \Sigma y_{irv,k}$

$$a_0 \Sigma x_{1,k} + a_1 \Sigma x_{1,k}^2 + a_2 \Sigma x_{1,k} x_{2,k} + a_3 \Sigma x_{1,k} x_{3,k} + a_4 \Sigma x_{1,k} x_{4,k} = \Sigma x_{1,k} y_{irv,k}$$

$$a_0 \Sigma x_{2,k} + a_1 \Sigma x_{1,k} x_{2,k} + a_2 \Sigma x_{2,k}^2 + a_3 \Sigma x_{2,k} x_{3,k} + a_4 \Sigma x_{2,k} x_{4,k} = \Sigma x_{2,k} y_{irv,k}$$

$$a_0 \Sigma x_{3,k} + a_1 \Sigma x_{1,k} x_{3,k} + a_2 \Sigma x_{2,k} x_{3,k} + a_3 \Sigma x_{3,k}^2 + a_4 \Sigma x_{3,k} x_{4,k} = \Sigma x_{3,k} y_{irv,k}$$

$$a_0 \Sigma x_{4,k} + a_1 \Sigma x_{1,k} x_{4,k} + a_2 \Sigma x_{2,k} x_{4,k} + a_3 \Sigma x_{3,k} x_{4,k} + a_4 \Sigma x_{4,k}^2 = \Sigma x_{4,k} y_{irv,k} \quad \text{---}$$

MAILING ADDRESS OF SENDER:

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PATENT NO. 6,866,024 B2

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Page 2 Of 7

PTO/SB/44 (04-04)

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2
DATED : March 15, 2005
INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 7, line 37,

please delete " $\text{Estimated Value} = F(f_{\theta}, \theta, \theta)$ " (5)

and insert -- $\text{Estimated Value} = F(f_{\theta}, \tilde{\theta}, \tilde{\theta})$ (5) --.

In column 7, line 48,

please delete " $P_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \theta + a_3 f_{\theta} \theta + a_4 \theta \theta$ " (6)

and insert -- $P_{\text{estimate}} = a_0 + a_1 f_{\theta} + a_2 f_{\theta} \tilde{\theta} + a_3 f_{\theta} \tilde{\theta} + a_4 \tilde{\theta} \tilde{\theta}$ (6) --.

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In column 9, lines 40-61,

TABLE 5

please delete "

Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{\theta} + a_3 \theta$
2	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{\theta} + a_3 \theta + a_4 \bar{\theta}^2$
3	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{f}_\theta \bar{\theta} + a_3 \bar{f}_\theta \theta + a_4 \bar{\theta} \theta$
4	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{f}_\theta \bar{\theta} + a_3 \bar{f}_\theta \theta + a_4 \bar{\theta}^2 + a_5 \bar{\theta} \theta + a_6 \theta^2$
5	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{\theta} + a_3 \theta + a_4 \bar{f}_\theta^2 + a_5 \bar{f}_\theta \bar{\theta}^2 + a_6 \theta^2$
6	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{f}_\theta \bar{\theta} + a_3 \bar{f}_\theta \theta + a_4 \bar{\theta}^2 + a_5 \bar{\theta} \theta + a_6 \theta^2$
7	$T_{estimate} = a_0 + a_1 \bar{f}_\theta + a_2 \bar{\theta} + a_3 \theta + a_4 \bar{f}_\theta^2 + a_5 \bar{f}_\theta \bar{\theta} + a_6 \bar{f}_\theta \theta + a_7 \bar{\theta}^2 + a_8 \bar{\theta} \theta + a_9 \theta^2$

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INVENTOR(S) : Rizzoni et al.

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and insert – Table 5. Various Basis Functions

Function Number	Basis Function
1	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta}$
2	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 \tilde{\theta}^2$
3	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \tilde{\theta} + a_4 \tilde{\theta} \tilde{\theta}$
4	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_\theta \tilde{\theta} + a_5 f_\theta \tilde{\theta} + a_6 \tilde{\theta} \tilde{\theta}$
5	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_\theta^2 + a_5 \tilde{\theta}^2 + a_6 \tilde{\theta}^2$
6	$T_{estimate} = a_0 + a_1 f_\theta + a_2 f_\theta \tilde{\theta} + a_3 f_\theta \tilde{\theta} + a_4 \tilde{\theta}^2 + a_5 \tilde{\theta} \tilde{\theta} + a_6 \tilde{\theta}^2$
7	$T_{estimate} = a_0 + a_1 f_\theta + a_2 \tilde{\theta} + a_3 \tilde{\theta} + a_4 f_\theta^2$ $+ a_5 f_\theta \tilde{\theta} + a_6 f_\theta \tilde{\theta} + a_7 \tilde{\theta}^2 + a_8 \tilde{\theta} \tilde{\theta} + a_9 \tilde{\theta}^2$

MAILING ADDRESS OF SENDER:

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PATENT NO. 6,866,024 B2

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This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/44 (04-04)

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2

DATED : March 15, 2005

INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 13, lines 26-44,

please delete "

TABLE 6

Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot ltq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot rpm \cdot ltq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot ltq^2 + b_{6,i} \cdot rpm^2 \cdot ltq + b_{7,i} \cdot rpm \cdot ltq^2 + b_{8,i} \cdot rpm^2 \cdot ltq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot ltq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot ltq \cdot \theta_i + b_{6,i} \cdot \theta_i^2 + b_{7,i} \cdot rpm \cdot \theta_i^2 + b_{8,i} \cdot ltq^2 \cdot \theta_i^2$

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2

DATED : March 15, 2005

INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

and insert - Table 6. Various Sub-Basis Functions

Function Number	Sub-Basis Function
1	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq$
2	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm \cdot liq$
3	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm^2 + b_{4,i} \cdot liq^2$
4	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm \cdot liq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot liq^2$
5	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm \cdot liq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot liq^2 + b_{6,i} \cdot rpm^2 \cdot liq^2$
6	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot rpm \cdot liq + b_{4,i} \cdot rpm^2 + b_{5,i} \cdot liq^2 + b_{6,i} \cdot rpm^2 \cdot liq + b_{7,i} \cdot rpm \cdot liq^2 + b_{8,i} \cdot rpm^2 \cdot liq^2$
7	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot \theta_i$
8	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot liq \cdot \theta_i$
9	$a_i = b_{0,i} + b_{1,i} \cdot rpm + b_{2,i} \cdot liq + b_{3,i} \cdot \theta_i + b_{4,i} \cdot rpm \cdot \theta_i + b_{5,i} \cdot liq \cdot \theta_i + b_{6,i} \cdot \theta_i^2 + b_{7,i} \cdot rpm \cdot \theta_i^2 + b_{8,i} \cdot liq^2 \cdot \theta_i^2$

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UNITED STATES PATENT AND TRADEMARK OFFICE CERTIFICATE OF CORRECTION

PATENT NO : 6,866,024 B2
DATED : March 15, 2005
INVENTOR(S) : Rizzoni et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 13, lines 51-53,

please delete "
$$\varepsilon = \min_{b_{ji}} \left(\sum_{i=1}^N (a_{\text{trained},i} - a_{\text{estimated},i})^2 \right)$$
 (23) "

and insert --
$$\varepsilon = \min_{b_{j,l}} \left(\sum_{i=1}^N (a_{\text{trained},l} - a_{\text{estimated},l})^2 \right)$$
 (23) --.

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